AMENDMENTS

CLAIMS

1. (currently amended): A method in a data processing system, the method comprising the steps of:

receiving a request to <u>automatically</u> generate a data model from a data definition file containing a data structure with a plurality of data elements, each data element having a name and a definition;

generating a diagram for each data element, the diagrams having names corresponding to the data elements;

determining whether an attribute in the data structure is associated with one of the data elements;

when it is determined that an attribute in the data structure is associated with one of the data elements,

displaying a graphical representation of the attribute with the diagram corresponding to the one data element;

determining whether the data structure includes a reference between two of the data elements;

when it is determined that the data structure includes a reference between two elements,

displaying a reference link from the diagram associated with a first of the two elements to the diagram associated with a second of the two elements;

determining whether the data structure includes a group attribute identifying at least one of the data elements as group attribute member;

when it is determined that the data structure includes a group attribute, displaying a group symbol;

displaying a first link between the group symbol and the diagram that is associated with the identified at least one data element; and

displaying a second link between the group symbol and the diagram of the data element having the associated group attribute.

2. (original): The method of claim 1, wherein the data model is an XML structure diagram.

3. (original): The method of claim 1, wherein the data definition file is a Document Type Definition file.

4. (original): The method of claim 1, wherein the data definition file is an XML schema file.

5. (original): The method of claim 1, wherein the step of determining whether the data structure includes a reference between two of the data elements comprises the step of determining whether the name of the second element is within the definition of the first data element.

6. (original): The method of claim 1, wherein the step of displaying the second link further comprises the step of determining whether the data element has the associated group attribute.

7. (original): The method of claim 6, wherein the step of determining whether the data element has the associated group attribute comprises the step of determining whether the group attribute is within the definition of the data element.

8. (original): The method of claim 1, further comprising the step of storing information used to generate the data model in a graphical view file.

9. (currently amended): A method in a data processing system comprising the steps of:

receiving an identification of a data definition file having a plurality of data elements and a plurality of relationships between the data elements, each data element having a name and a definition; and

generating a graphical representation that visually identifies the plurality of data elements and the plurality of relationships between the data elements contained within the data definition file, wherein a textual representation is synchronized with the graphical representation so that a modification in one representation is automatically visible in the other representation.

10. (original): The method of claim 9, wherein the graphical representation corresponds to an XML structure diagram.

11. (original): The method of claim 9, wherein the data definition file corresponds to a Document Type Definition file.

12. (original): The method of claim 9, wherein the step of generating a graphical representation comprises the step of generating a diagram for each data element, the diagrams having names corresponding to the data elements.

13. (original): The method of claim 12, wherein the step of generating a graphical representation further comprises the steps of:

determining whether the data structure contains an attribute for one of the data elements; and

when it is determined that the data structure contains an attribute for one of the data elements,

displaying a graphical representation of the attribute with the diagram corresponding to the one data element.

14. (original): The method of claim 12, wherein the step of generating a graphical representation further comprises the steps of:

identifying a first of the relationships as an element reference between two of the data elements; and

displaying a reference link from the diagram associated with a first of the two elements to the diagram associated with a second of the two elements.

15. (original): The method of claim 14, wherein the step of identifying a first of the relationships comprises the step of determining whether the name of the second element is within the definition of the first data element.

16. (original): The method of claim 12, wherein the step of generating a graphical representation further comprises the steps of:

identifying a second of the relationships as a group reference between two of the data elements;

displaying a group symbol; displaying a first link between the group symbol and the diagram that is associated with a first of the two elements; and

displaying a second link between the group symbol and the diagram that is associate with a second of the two elements.

17. (original): The method of claim 16, wherein the step of identifying a second of the relationships comprises the steps of:

determining whether the data structure includes a group attribute identifying the first data element as a group attribute member; and

determining whether the definition of the second data element contains the group attribute.

18. (original): The method of claim 9, further comprising the step of storing information used to generate the data model in a graphical view file.

19. (currently amended) A method in a data processing system, the method comprising the steps of:

receiving a request to <u>automatically</u> generate a data definition file from a graphical representation having a plurality of data element diagrams, each data element diagram having a name;

adding a data element identifier in the data definition file for each data element diagram in the graphical representation;

adding the name of each data element diagram to the corresponding data element identifier;

determining whether an attribute is associated with one of the data element diagrams;

when it is determined that an attribute is associated with one of the data element diagrams,

adding the attribute to the data element identifier for the one data element diagram;

determining whether the graphical representation has a reference link between two of the data element diagrams;

when it is determined that the graphical representation has a reference link between two data element diagrams,

adding a reference to the data element identifier corresponding to one of the two data element diagrams to reflect a link between the two data element diagrams;

determining whether the graphical representation has a group symbol;

when it is determined that the graphical representation has a group symbol,

determining whether the group symbol is a destination in a first link with a first of the data element diagrams;

when it is determined that the group symbol is a destination in a first link with a first of the data element diagrams,

adding a group definition to the data definition file that includes the name of the first data element diagram;

determining whether the group symbol is a source in a second link with a second of the data element diagrams; and

when it is determined that the group symbol is a source in a second link with a second of the data element diagrams,

adding to the data element identifier corresponding to the second element diagram a reference corresponding to the group definition.

20. (original): The method of claim 19, wherein the graphical representation corresponds to an XML structure diagram.

21. (original): The method of claim 19, wherein the data definition file corresponds to a Document Type Definition file.

22. (original): The method of claim 19, wherein the data definition file corresponds to an XML schema file.

23. (original): The method of claim 19, wherein the step of adding a reference to the data element identifier comprises the steps of:

identifying one of two data element diagrams as a source of the reference link and the other as a destination of the reference link; and

adding the name of the destination to the data element identifier corresponding to the source.

24. (currently amended): A method in a data processing system comprising the steps of:

receiving an indication to _automatically_ generate a data definition file from a graphical representation having a plurality of data element diagrams and a plurality of relationships between the data element diagrams, each data element diagram having a name; and

adding a plurality of data element identifiers to the data definition file that reflect the data element diagrams and the relationships between the data element diagrams.

25. (original): The method of claim 24, wherein the graphical representation corresponds to an XML structure diagram.

26. (original): The method of claim 24, wherein the data definition file corresponds to a Document Type Definition file.

27. (original): The method of claim 24, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the step of adding the name of each data element diagram to the corresponding data element identifier.

28. (original): The method of claim 24, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the steps of:

determining whether an attribute is associated with one of the data element diagrams;

when it is determined that an attribute is associated with one of the data element diagrams, and

adding the attribute to the data element identifier for the one data element diagram.

29. (original): The method of claim 24, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the steps of:

determining whether one of the relationships corresponds to a reference link between two of the data element diagrams; and

when it is determined that one of the relationships corresponds to a reference link between two data element diagrams,

adding a reference to the data element identifier corresponding to one of the two data element diagrams to reflect the reference link between the two data element diagrams.

30. (original): The method of claim 24, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the steps of:

determining whether another of the relationships is associated with a group symbol;

when it is determined that the other of the relationships is associated with a group symbol,

determining whether the group symbol is a destination in a first link with a first of the data element diagrams; and

when it is determined that the group symbol is a destination in a first link with a first of the data element diagrams,

adding a group definition to the data definition file that includes the name of the first data element diagram.

31. (original): The method of claim 30, further comprising the steps of:

when it is determined that the group symbol is a destination in a first link with a first of the data element diagrams,

determining whether the group symbol is a source in a second link with a second of the data element diagrams; and

when it is determined that the group symbol is a source in a second link with a second of the data element diagrams,

adding to the data element identifier corresponding to the second element diagram a reference corresponding to the group definition.

32. (currently amended): A computer-readable medium containing instructions for controlling a data processing system to perform a method, the method comprising the steps of:

receiving a request to <u>automatically</u> generate a data model from a data definition file containing a data structure with a plurality of data elements, each data element having a name and a definition;

generating a diagram for each data element, the diagrams having names corresponding to the data elements;

determining whether an attribute in the data structure is associated with one of the data elements;

when it is determined that an attribute in the data structure is associated with one of the data elements,

displaying a graphical representation of the attribute with the diagram corresponding to the one data element;

determining whether the data structure includes a reference between two of the data elements;

when it is determined that the data structure includes a reference between two elements,

displaying a reference link from the diagram associated with a first of the two elements to the diagram associated with a second of the two elements;

determining whether the data structure includes a group attribute identifying at least one of the data elements as group attribute member;

when it is determined that the data structure includes a group attribute,

displaying a group symbol;

displaying a first link between the group symbol and the diagram that is associated with the identified at least one data element; and

12

displaying a second link between the group symbol and the diagram of

the data element having the associated group attribute.

33. (original): The computer-readable medium of claim 32, wherein the data model is an XML structure diagram.

34. (original): The computer-readable medium of claim 32, wherein the data definition file is a Document Type Definition file.

35. (original): The computer-readable medium of claim 32, wherein the data definition file is an XML schema file.

36. (original): The computer-readable medium of claim 32, wherein the step of determining whether the data structure includes a reference between two of the data elements comprises the step of determining whether the name of the second element is within the definition of the first data element.

37. (original): The computer-readable medium of claim 32, wherein the step of displaying the second link further comprises the step of determining whether the data element has the associated group attribute.

38. (original): The computer-readable medium of claim 37, wherein the step of determining whether the data element has the associated group attribute comprises the step of determining whether the group attribute is within the definition of the data element.

39. (original): The computer-readable medium of claim 32, wherein the method further comprises the step of storing information used to generate the data model in a graphical view file.

40. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the method comprising the steps of:

receiving an identification of a data definition file having a plurality of data elements and a plurality of relationships between the data elements, each data element having a name and a definition; and

generating a graphical representation that visually identifies the plurality of data elements and the plurality of relationships between the data elements contained within the data definition file, wherein a textual representation is synchronized with the graphical representation so that a modification in one representation is automatically visible in the other representation.

41. (original): The computer-readable medium of claim 40, wherein the graphical representation corresponds to an XML structure diagram.

42. (original): The computer-readable medium of claim 40, wherein the data definition file corresponds to a Document Type Definition file.

43. (original): The computer-readable medium of claim 40, wherein the step of generating a graphical representation comprises the step of generating a diagram for each data element, the diagrams having names corresponding to the data elements.

44. (original): The computer-readable medium of claim 43, wherein the step of generating a graphical representation further comprises the steps of:

determining whether the data structure contains an attribute for one of the data elements; and

when it is determined that the data structure contains an attribute for one of the data elements,

displaying a graphical representation of the attribute with the diagram corresponding to the one data element.

45. (original): The computer-readable medium of claim 43, wherein the step of generating a graphical representation further comprises the steps of:

identifying a first of the relationships as an element reference between two of the data elements; and

displaying a reference link from the diagram associated with a first of the two elements to the diagram associated with a second of the two elements.

46. (original): The computer-readable medium of claim 45, wherein the step of identifying a first of the relationships comprises the step of determining whether the name of the second element is within the definition of the first data element.

47. (original): The computer-readable medium of claim 43, wherein the step of generating a graphical representation further comprises the steps of:

identifying a second of the relationships as a group reference between two of the data elements;

displaying a group symbol;

displaying a first link between the group symbol and the diagram that is associated with a first of the two elements; and

displaying a second link between the group symbol and the diagram that is associate with a second of the two elements.

48. (original): The computer-readable medium of claim 47, wherein the step of identifying a second of the relationships comprises the steps of:

determining whether the data structure includes a group attribute identifying the first data element as a group attribute member; and

determining whether the definition of the second data element contains the group attribute.

49. (original): The computer-readable medium of claim 40, wherein the method further comprises the step of storing information used to generate the data model in a graphical view file.

50. (currently amended): A computer-readable medium containing instructions for controlling a data processing system to perform a method, the method comprising the steps of:

receiving a request to <u>automatically</u> generate a data definition file from a graphical representation having a plurality of data element diagrams, each data element diagram having a name;

adding a data element identifier in the data definition file for each data element diagram in the graphical representation;

adding the name of each data element diagram to the corresponding data element identifier;

determining whether an attribute is associated with one of the data element diagrams;

when it is determined that an attribute is associated with one of the data element diagrams,

adding the attribute to the data element identifier for the one data element diagram;

determining whether the graphical representation has a reference link between two of the data element diagrams;

when it is determined that the graphical representation has a reference link between two data element diagrams,

17

adding a reference to the data element identifier corresponding to one of the two data element diagrams to reflect a link between the two data element diagrams;

determining whether the graphical representation has a group symbol;

when it is determined that the graphical representation has a group symbol,

determining whether the group symbol is a destination in a first link with a first of the data element diagrams;

when it is determined that the group symbol is a destination in a first link with a first of the data element diagrams,

adding a group definition to the data definition file that includes the name of the first data element diagram;

determining whether the group symbol is a source in a second link with a second of the data element diagrams; and

when it is determined that the group symbol is a source in a second link with a second of the data element diagrams,

adding to the data element identifier

corresponding to the second element diagram a

reference corresponding to the group definition.

51. (original): The computer-readable medium of claim 50, wherein the graphical representation corresponds to an XML structure diagram.

52. (original): The computer-readable medium of claim 50, wherein the data definition file corresponds to a Document Type Definition file.

53. (original): The computer-readable medium of claim 50, wherein the data definition file corresponds to an XML schema file.

54. (original): The computer-readable medium of claim 50, wherein the step of adding a reference to the data element identifier comprises the steps of:

identifying one of two data element diagrams as a source of the reference link and the other as a destination of the reference link; and

adding the name of the destination to the data element identifier corresponding to the source.

55. (currently amended): A computer-readable medium containing instructions for controlling a data processing system to perform a method, the method comprising the steps of:

receiving an indication to <u>automatically</u> generate a data definition file from a graphical representation having a plurality of data element diagrams and a plurality of relationships between the data element diagrams, each data element diagram having a name; and

adding a plurality of data element identifiers to the data definition file that reflect the data element diagrams and the relationships between the data element diagrams.

56. (original): The computer-readable medium of claim 55, wherein the graphical representation corresponds to an XML structure diagram.

57. (original): The computer-readable medium of claim 55, wherein the data definition file corresponds to a Document Type Definition file.

58. (original): The computer-readable medium of claim 55, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the step of adding the name of each data element diagram to the corresponding data element identifier.

59. (original): The computer-readable medium of claim 55, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the steps of:

determining whether an attribute is associated with one of the data element diagrams; and

when it is determined that an attribute is associated with one of the data element diagrams,

adding the attribute to the data element identifier for the one data element diagram.

60. (original): The computer-readable medium of claim 55, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the steps of:

determining whether one of the relationships corresponds to a reference link between two of the data element diagrams; and

when it is determined that one of the relationships corresponds to a reference link between two data element diagrams,

adding a reference to the data element identifier corresponding to one of the two data element diagrams to reflect the reference link between the two data element diagrams.

61. (original): The computer-readable medium of claim 55, wherein the step of adding the plurality of data element identifiers to the data definition file comprises the steps of:

determining whether another of the relationships is associated with a group symbol;

when it is determined that the other of the relationships is associated with a group symbol,

determining whether the group symbol is a destination in a first link with a first of the data element diagrams; and

when it is determined that the group symbol is a destination in a first link with a first of the data element diagrams,

adding a group definition to the data definition file that includes the name of the first data element diagram.

62. (original): The computer-readable medium of claim 61, wherein the method further comprises the steps of:

when it is determined that the group symbol is a destination in a first link with a first of the data element diagrams,

determining whether the group symbol is a source in a second link with a second of the data element diagrams; and

when it is determined that the group symbol is a source in a second link with a second of the data element diagrams,

adding to the data element identifier corresponding to the second

element diagram a reference corresponding to the group definition.

63. (currently amended): A data processing system comprising:

a secondary storage device comprising a first data definition file having first data

elements and relationships between the first data elements;

a memory device further comprising a program that receives a first request to

display a first graphical representation of the first data definition file such that

the first graphical representation has first data element diagrams and

relationships between the first data element diagrams reflecting the first data

elements and the relationships between the first data elements contained in the

first data definition file, that displays the first graphical representation

responsive to receiving the first request, that displays a second graphical

representation having second data element diagrams and relationships between

the second data element diagrams, that receives a second request to

automatically generate a second data definition file from the second graphical

representation such that the second data definition file has second data

elements and relationships between the second data elements reflecting the

second data element diagrams and the relationships between the second data

element diagrams of the second graphical representation, and that

automatically generates the second data definition file responsive to receiving

the second request; and

a processor for running the program.

64. (original): The data processing system of claim 63, wherein the first data definition file corresponds to a Document Type Definition file.

65. (original): The data processing system of claim 63, wherein the second data definition file corresponds to a Document Type Definition file.

66. (original): The data processing system of claim 63, wherein the program further stores the second graphical representation in a second graphical view file on the secondary storage device.

67. (original): The data processing system of claim 63, wherein the program further stores the second data definition file on the secondary storage device.

68. (original): The data processing system of claim 63, wherein the secondary storage device further comprises an XML data structure module that includes XML constructs corresponding to a Document Type Definition specification.

69. (original): The data processing system of claim 68, wherein the program uses the XML constructs to add the plurality of data element identifiers to the first data definition file and to parse the plurality of data elements contained in the second data definition file.

70. (currently amended): A system comprising:

23

means for receiving an identification of a data definition file having a plurality of data elements and a plurality of relationships between the data elements, each data element having a name and a definition; and

means for <u>automatically</u> generating a graphical representation that visually identifies the plurality of data elements and the plurality of relationships between the data elements contained within the data definition file.